

Chapter 2

The General Framework of IAEA Safeguards

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A prudent ruler cannot keep his word, nor should he, where such fidelity would damage him, and when the reasons that made him promise are no longer relevant.

Niccolò Machiavelli 1513, pp. 61–62

The very meaning of a line in the law is that you intentionally may come as close to it as you can if you do not pass it.

Justice Oliver Wendell Holmes 1920, p. 395

Almost all nations observe almost all principles of international law and almost all of their obligations almost all of the time.

Louis Henkin 1979, p. 47

In my experience [States] will keep their bargains as long as it is in their interest.

Hans J. Morgenthau 1948, p. 560

Abstract Starting with a consideration of some main reasons for States to comply with international treaty obligations, this chapter portrays the general framework of IAEA Safeguards as the process, to assess whether others are complying with their obligations. To be credible, this process should rely on five key elements: treaty language, monitoring, analysis, evaluation and findings. It should detect evidence of violations, deter violations and help to build confidence among States. The IAEA Safeguards System is discussed and its implementation in the interplay between the Director General and the Board of Governors characterized as an effort to ensure zero-tolerance in case of non-compliance. The chapter concludes

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that in order to carry out its safeguards obligations and to maintain its credibility the IAEA must consider, investigate, draw conclusions and decide on necessary actions in accordance with its mandate and use its capabilities to assess the provenance and authenticity of third-party (intelligence) information.

Keywords Compliance • Comprehensive Safeguards Agreements (CSAs) • International Atomic Energy Agency (IAEA) • IAEA safeguards • Model additional protocol • Verification

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2.1 Introduction

It is a safe assumption that the general propensity of States is to comply with their international obligations undertaken through negotiated treaties and other related international legal instruments. One might well ask, why? A number of considerations lend support to this proposition. These are: efficiency, interests and norms.¹

Efficiency: Policy decisions do not take place in a vacuum nor are they a free good. Decision-making theory holds that individuals and entities (organizations) seek to conserve resources for the most critical and urgent matters.² Efficiency leads to considerable policy continuity, thus in the areas of treaty obligations, the alternative to recalculation is to follow the established rule. In other words, instead of the continuously recalculating, maximizing rational actor, a ‘satisficing’ model of bounded rationality reacts to problems as they arise and devises solutions within a familiar and accustomed repertoire.³ Bureaucratic organizations generally function according to routines and standard operating procedures, mainly governed by authoritative rules and regulations. The adoption of a treaty, much as the enactment of any other law, establishes an authoritative rule system, which leads to compliance as the normal organizational behaviour. Bureaucracy, however, is not monolithic, and may well include opponents to a treaty regime. Controversies over rule implementation or interpretation are generally resolved in accordance

¹For a useful and stimulating work on thinking broadly about compliance matters see Chayes and Chayes 1995.

²See Lindblom 1968, p. 14.

³See Allison 1971, Chaps. 3–4.

with normal bureaucratic practices in which the presumption is in favour of following the rule, as an outright violation would be a much heavier case to make, except in circumstances where the State might perceive that international norms are not being applied in a fair and consistent manner.

Interests: It is a basic principle of international law that States cannot be legally bound except with their own consent, as such most arms control treaties include provisions permitting a State party to withdraw from the treaty in extenuating circumstances which have jeopardized its supreme national interests. Hence, a State need not enter into a treaty that it does not regard as being in its own interest. Treaties, as other legal instruments, are artefacts of political choice and the process by which they are formulated, negotiated and concluded is designed to ensure that the interests of all negotiating parties are accommodated to a greater or lesser extent. Treaty formulation and negotiation, at its best, is a creative exercise through which the parties not only assess the benefits and burdens of obligations but redefine and sometimes even discover their interests. It can be a learning process in which national positions and concepts of national interests evolve. Furthermore, negotiators often have to take a long-range view, as they may end up with operational responsibility for the treaty after its conclusion. They are likely to attach considerable importance to developing governance norms and practices that will operate predictably over time. These elements tend to influence broad-based conceptions of national interest that contribute to induce compliance. A good treaty is one that reflects bargains and is perceived to be in the interest of all negotiating parties. If issues of non-compliance and enforcement become endemic, then the root cause likely is that either the original bargain did not adequately reflect the interests of all parties rather than mere disobedience or that concerns about fairness and impartiality regarding the treaty regime have risen to the fore. While States may know that they can violate treaty commitments in crunch situations, they do not negotiate agreements with the notion that they can violate the treaty as a matter of routine. The international situation that led to a treaty does not remain static. Lasting treaty regimes must be able to adapt to changes in the international setting, not only through formal amendments but also through interpretations agreed by contracting parties, which in turn are supportive of the default mode of compliance.

Norms: The fundamental norm of international law is *pacta sunt servanda* (treaties are to be obeyed). In many States, treaties are enshrined in domestic legislation. Thus, treaties are legally binding on the States that have ratified them and this in turn entails a legal obligation to obey the provisions. The effort put in by States to negotiate a treaty, or to accede to it, is reflective of the understanding that entering into a treaty commitment will constrain the State's own sovereignty and freedom of action. This effort also reflects the State's interest that in constraining its own sovereignty it is also similarly constraining the sovereignty of other States parties and thus contributing to the well-being of all parties. This highlights the general rule that States acknowledge an obligation to comply with the agreements they have signed.

2.2 Verification of Compliance

The above discussion reflects the view that ordinarily States will comply with the treaties that they are a party to, and that non-compliance is a deviant rather than an expected behaviour. Arms control treaties concern core national security interests and the authority and value of such legal agreements is enhanced when compliance can be assured, especially through a credible and impartial verification regime. International security treaties require the active participation and compliance of the States' parties and verification of such compliance by international mechanisms, as such treaties can be sustained only through cooperative verification measures between the States' parties and the international verification organization. The long-term sustainability of international arms control arrangements is not possible without credible verification of compliance. Assessment of compliance of international arms control agreements is vested in international verification organizations, such as the International Atomic Energy Agency (for the Non-Proliferation Treaty), the Comprehensive Nuclear-Test Ban Treaty Organization (for the CTBT) and the Organization for the Prohibition of Chemical Weapons (for the CWC).

Verification can be described as the processes that States use, to assess whether other States are complying with their arms control agreement obligations. To verify compliance, a State party must be assured that the forces or activities of another State are within the constraints established by the limits and obligations in the agreement. A verifiable treaty contains an interlocking web of constraints and provisions designed to deter non-compliance, to make non-compliance more complicated and more expensive, and to make its detection more timely.⁴ A credible verification regime relies on five key elements: treaty language, monitoring, analysis, evaluation and findings (conclusions). The verification system for an arms control treaty cannot remove all doubts about the existence of possible non-compliance. But it can provide States' parties with confidence in compliance with the treaty if it meets three objectives. First, the verification should detect evidence of any violations in a timely manner. The data collected by the monitoring systems, when combined with the restrictions in the treaty, should enable identification of violations in a timely manner. Second, the verification system should deter violations of the treaty through early detection. Third, the verification system should help build confidence in the viability of the treaty through conclusions that the States' parties are complying with limits and obligations in the treaty.

2.2.1 *The Role of IAEA Safeguards*

The IAEA safeguards system fulfils all three criteria. The principal role of IAEA safeguards is to verify compliance by States' parties with their undertakings

⁴See A.F. Woolf, *Monitoring and Verification in Arms Control*, Congressional Research Service, 23 December 2011.

under the nuclear-weapon-free zone (NWFZ) treaties and compliance with Non-Proliferation Treaty (NPT) comprehensive safeguards agreements.

NWFZ treaties and the NPT require NNWS parties to use nuclear energy exclusively for peaceful purposes. Verification of this obligation is fulfilled by bringing into force a comprehensive safeguards agreement with the Agency. The basic undertaking of the State is to accept safeguards on all source or special fissionable material in all peaceful nuclear activities within its territory, under its jurisdiction or carried out under its control anywhere, for the exclusive purpose of verifying that such material is not diverted to nuclear weapons or other nuclear explosive devices.⁵ For its part, the IAEA has the corresponding right and obligation to ensure that safeguards are applied in accordance with the Agency's safeguards system.⁶

In February 1992, the IAEA Board of Governors affirmed that the scope of comprehensive safeguards agreements was not limited to nuclear material actually declared by a State, but included all material that is required to be declared. In other words, the Board confirmed that the organization has the right and obligation, under such agreements, to verify not only that State declarations of nuclear material subject to safeguards are 'correct' (i.e. they accurately describe the types and quantities of the State's declared nuclear material holdings), but that they are also 'complete' (i.e. that they include all material that should have been declared).

The objective of IAEA safeguards is the timely detection of diversion of significant quantities of nuclear material from peaceful nuclear activities to the manufacture of nuclear weapons or of other nuclear explosive devices or for purposes unknown, and deterrence of such diversion by the risk of early detection. The 'timely detection' of the diversion of 'significant quantities' is based on the premise that, in case a certain quantity of nuclear material cannot be accounted for, the possibility of the State manufacturing a nuclear explosive device cannot be excluded. Furthermore, a certain amount of time is required for the State to convert nuclear material into a weapon-usable form. Goal quantities and timeliness requirements are established for detecting diversion of different categories and forms of nuclear material (e.g. low-enriched uranium and high-enriched uranium; bulk form or fresh reactor fuel assemblies).

Achievement of the second objective, that is, the detection of undeclared nuclear material and activities in a State, requires different tools from those needed for the timely detection of the diversion of declared nuclear material. These are a broader range of information, more emphasis on the evaluation of information, more access for inspectors to locations and a more analytical approach in implementing safeguards. It also requires the evaluation of the State's entire nuclear fuel cycle capabilities (i.e. the State 'as a whole') in addition to individual facilities.

⁵(International Atomic Energy Agency Information Circular), INFCIRC/153 (Corr.), para 1.

⁶IAEA: Guidance for States Implementing Comprehensive Safeguards Agreements and Additional Protocols, (IAEA Services Series 21), pp. 1–2.

The IAEA has defined three safeguards objectives⁷ that are common to all States with CSAs, as follows:

- to detect undeclared nuclear material and activities anywhere in the State;
- to detect undeclared production or processing of nuclear material at facilities and Locations Outside Facilities (LOFs) where nuclear material is customarily used; and
- to detect diversion of declared nuclear material at facilities and LOFs.

In order to meet the overall objective the Agency determines an optimized combination of safeguards measures needed to achieve State-specific technical objectives, based on the evaluation of all available information on the State. The concept of considering the State as a whole provides the opportunity to focus verification efforts and resources, where needed, to meet the State-specific objectives. The methodology and approach are based on a comprehensive State evaluation that takes State-specific factors into consideration in all stages of safeguards implementation.

In determining how generic safeguards objectives are to be addressed for a particular State, the Agency conducts an analysis of all technically plausible paths by which that State could pursue the acquisition of nuclear material for the development of a nuclear weapon or other nuclear explosive device. Such an acquisition path could involve the diversion of declared nuclear material, unreported imports of nuclear material, unreported production or processing of nuclear material at declared nuclear facilities or LOFs, undeclared nuclear material and activities or any combination of these. The Agency then establishes technical objectives for each path.

Thus, the generic and technical objectives and applicable safeguards measures to address them form the basis of a State-level safeguards approach for a State.

The IAEA may carry out three kinds of inspections: ad hoc, routine and special inspections, as well as complementary accesses. States must ensure the inspectors are able to carry out their activities, by providing access to locations and to information necessary to meet independently the objectives of the inspection. States, and NWFZ regional control mechanisms, have the right to have IAEA personnel accompanied during inspections, provided that in doing so, inspectors are not delayed or otherwise impeded in carrying out their functions. States have the right to reject the designation of any inspector at any time without assigning reasons, and also to refuse visas to designated inspectors.

Ad hoc inspections are normally conducted to verify the information contained in the initial report by a State to the IAEA, before Subsidiary Arrangements have been concluded and Facility Attachments have been prepared, or to verify nuclear material before it is exported or upon receipt in the importing State.

Routine inspections⁸ are conducted after the Subsidiary Arrangements and Facility Attachments have been concluded and specific information has been incorporated in the Attachments, including information on 'strategic points' in

⁷See, 'The Safeguards System of the International Atomic Energy Agency'. http://www.iaea.org/safeguards/documents/safeg_system.pdf.

⁸The purposes of routine inspections are listed in para 72 of INFCIRC/153.

each facility. Once the broader conclusions are drawn in a State with an AP in force, the IAEA has the right under certain conditions to conduct inspections on a random basis, with a minimum advance notification to the State and operator or to select part of the routine inspection activities randomly.

The IAEA may require special inspections which may be either additional to the routine inspection effort, or involve access to information or locations which are additional to those involved in routine and ad hoc inspections, or both. Special inspections can be triggered by the IAEA in situations where there are indications of undeclared nuclear activities, and/or if the IAEA considers that information made available by the State is not adequate for the Agency to fulfil its responsibilities in the implementation of safeguards. Furthermore, under the Additional Protocol (INFCIRC/540 Corr.), the IAEA can request 'complementary access' to resolve questions or inconsistencies, or to seek additional information, in the course of the implementation of safeguards. It is worth noting that the procedure to initiate a special inspection is far more complex than the one established for a complementary access under the Additional Protocol.⁹ While special inspections have rarely been carried out, they are an important element of the Agency's legal authority to implement safeguards, and may be necessary for the IAEA to achieve the objectives of NWFZ treaty and NPT safeguards.

Complementary access refers to access provided to IAEA inspectors by a State under an Additional Protocol, to enable the inspectors to carry out specific verification and assessment activities to meet the Agency's safeguards objectives. The Agency may request complementary access to a variety of locations in a State with an Additional Protocol in force.¹⁰ Each type of access requested has specific advance notice requirements; in some cases this may be less than 2 h. In addition to locations associated with State declarations under an AP, the IAEA may also request complementary access to any location in the State.¹¹

Managed access refers to steps taken by the State to prevent the dissemination of proliferation-sensitive information,¹² to meet safety or physical security requirements, or to protect proprietary or commercially sensitive information, in such a manner as to not impede the IAEA's activities to fulfil the purpose of the access. Arrangements for managed access shall not preclude the Agency from conducting activities necessary to provide credible assurance of the absence of undeclared nuclear material and activities at the location in question. Ultimately, the State must provide sufficient access to information and locations during managed access to allow the IAEA inspectors to fulfil the purpose of the access.

The discovery in 1991 of Iraq's clandestine nuclear weapons programme highlighted the shortcomings of safeguards implementation focusing essentially on

⁹In some cases the IAEA may seek a complementary access with advance notice of 2 h, or even less than 2 h.

¹⁰INFCIRC/540, Article 5.

¹¹INFCIRC/540, Article 4.

¹²Such as uranium enrichment or plutonium separation.

declared nuclear material and safeguards conclusions drawn at the facility level. This set the stage and provided the catalyst for far-reaching efforts to strengthen the safeguards system, in particular the Agency's ability to detect undeclared nuclear material and activities in States with comprehensive safeguards agreements. The objective, as endorsed by the Board of Governors, was to develop a safeguards system that could verify not only the correctness of States' declarations of nuclear material, but also the completeness thereof. The result was the Model Additional Protocol, which was approved by the Board on 15 May 1997, and subsequently published as INFCIRC/540 (Corr.). Additional protocols for States with comprehensive safeguards agreements in force must include all of the measures contained in the Model Additional Protocol. Enhanced evaluation of all information available to the Agency about a State's nuclear material, activities and plans, including information in States' declarations and voluntary reports, the results of the Agency's verification activities and information from open and other sources, is key to the strengthened safeguards system. No verification system in the world anywhere can provide an absolute guarantee of detecting violations if a state is taking active concealment measures, on the other hand, the suite of safeguards technologies and methodologies being implemented by the IAEA currently make it very difficult for a state to have the assurance of the non-detection of clandestine nuclear activities by the Agency.

2.2.2 Non-Compliance with IAEA Safeguards

The basic undertaking by NNWS in the comprehensive safeguards agreement, in accordance with Article III.1 of the NPT, is to accept safeguards on all source or special fissionable material in all peaceful nuclear activities within its territory, under its jurisdiction or carried out under its control anywhere, for the exclusive purpose of verifying that such material is not diverted to nuclear weapons or other nuclear explosive devices.¹³

The IAEA Board of Governors, upon report of the Director General, may decide that an action by the State is *essential and urgent* in order to ensure verification that nuclear material subject to safeguards is not diverted from peaceful uses to nuclear weapons or purposes unknown and is being used in accordance with the State's declaration in peaceful applications. In the event, the Board may call upon the State to take the required action without delay, irrespective of whether procedures for the settlement of a dispute have been invoked.¹⁴

The Board, upon examination of relevant information reported to it by the Director General, may find that the Agency is not able to verify that there has been no diversion of nuclear material required to be safeguarded, and may make the

¹³INFCIRC/153 (Corr.), para 1.

¹⁴*Ibid.*, para 18.

reports provided for in para C of Article XII of the Statute and also may take, where applicable, the other measures provided for in that paragraph. In taking such action the Board shall take account of the degree of assurance provided by the safeguards measures that have been applied and shall afford the State every reasonable opportunity to furnish the Board with any necessary reassurance.¹⁵

In describing the IAEA's functions the Statute provides that the Agency submit reports, when appropriate, to the Security Council. If in connection with the activities of the Agency there should arise questions that are within the competence of the Security Council, the Agency shall notify the Security Council, as the organ bearing the main responsibility for the maintenance of international peace and security, and may also take the measures open to it under the Statute, including those provided in para C of Article XII.¹⁶

The IAEA Statute also provides that Agency inspectors shall report any non-compliance to the Director General who shall thereupon transmit the report to the Board of Governors. The Board shall call upon the State or States to remedy forthwith any non-compliance which it finds to have occurred. The Board shall report the non-compliance to all members and to the Security Council and the General Assembly of the United Nations.¹⁷

The Statute is not self-implementing; it requires a safeguards agreement as a vehicle for bringing reports by the Director General to the Board of Governors for its consideration. In practice, over the years, determination of findings of non-compliance has been within the remit of the Board and not the Director General. The Board has made findings on non-compliance by Iraq, the Democratic People's Republic of Korea (DPRK), Romania, Iran, Syria and Libya. In the cases of Iraq, the DPRK, Iran and Syria, the Board decided to report the non-compliance to the Security Council along with Board resolutions requesting the States concerned to remedy the non-compliance and to cooperate with the IAEA in that regard. In the case of Romania and Libya, the Board reported the non-compliance to the Security Council 'for information only'. And, in the cases of undeclared nuclear activities carried out by Egypt and South Korea, the Board chose not to make any findings of non-compliance. This record of the Board is indicative of political considerations introduced by Board members in considering reports of the Director General. And, similarly, the actions of the Security Council in this context have also been politically driven.

The correct approach should be the one as stated by Director General Mohamed ElBaradei in November 2002:

I believe that while differing circumstances may necessitate asymmetric responses, in the case of non-compliance with non-proliferation obligations, for the credibility of the regime, the approach in all cases should be one and the same: zero tolerance.¹⁸

¹⁵Ibid., para 19.

¹⁶IAEA Statute, Article III.B.4.

¹⁷Ibid., Article XII.C.

¹⁸IAEA, 'Reinforcing the World's Regime Against Nuclear Weapons', 14 November 2002, www.iaea.org/NewsCenter/News/2002/11-13-903199.shtml.

Consistency and predictability are essential if the decisions of the Board are to be seen as credible and to maintain confidence in the integrity of the Agency's safeguards system.

2.3 Conclusion

To wrap up, I have stated that in general States have the propensity to honour their international treaty obligations. In the nuclear non-proliferation field this proposition is borne out by the fact that the IAEA is implementing safeguards in more than 180 States and there has not been any finding of non-compliance since June 2011 (Syria). In total, in the 57-year history of the Agency, and the 44-year history of the NPT, there have been only six cases of determinations of non-compliance.

The IAEA safeguards system has been working well. Measures to strengthen the safeguards system were put in place between 1991 and 1997 and have been updated since then. The challenges emanate from the political machinations of States and their rivalries and conflicts that spill into the realm of nuclear verification. Nuclear materials in use around the world are increasing continuously, but the financial resources provided by States for IAEA nuclear verification remain paltry.

NPT States have affirmed that the IAEA is the competent authority responsible for verifying and assuring, in accordance with the Statute of IAEA and the IAEA safeguards system, compliance with its safeguards agreements with States parties undertaken in fulfilment of their obligations, with a view to preventing diversion of nuclear energy from peaceful uses to nuclear weapons or other nuclear explosive devices. Nothing should be done to undermine the authority of IAEA in this regard. States' parties that have concerns regarding non-compliance with the safeguards agreements by other States' parties should direct such concerns, along with supporting evidence and information, to the IAEA to consider, investigate, draw conclusions and decide on necessary actions in accordance with its mandate. In this regard it is essential that the IAEA has the capabilities to authenticate the provenance and authenticity of third-party (intelligence) information in order to carry out its safeguards obligations and to maintain its credibility. The international legal community can assist by ensuring that treaty undertakings are interpreted fairly and without political overtones.

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